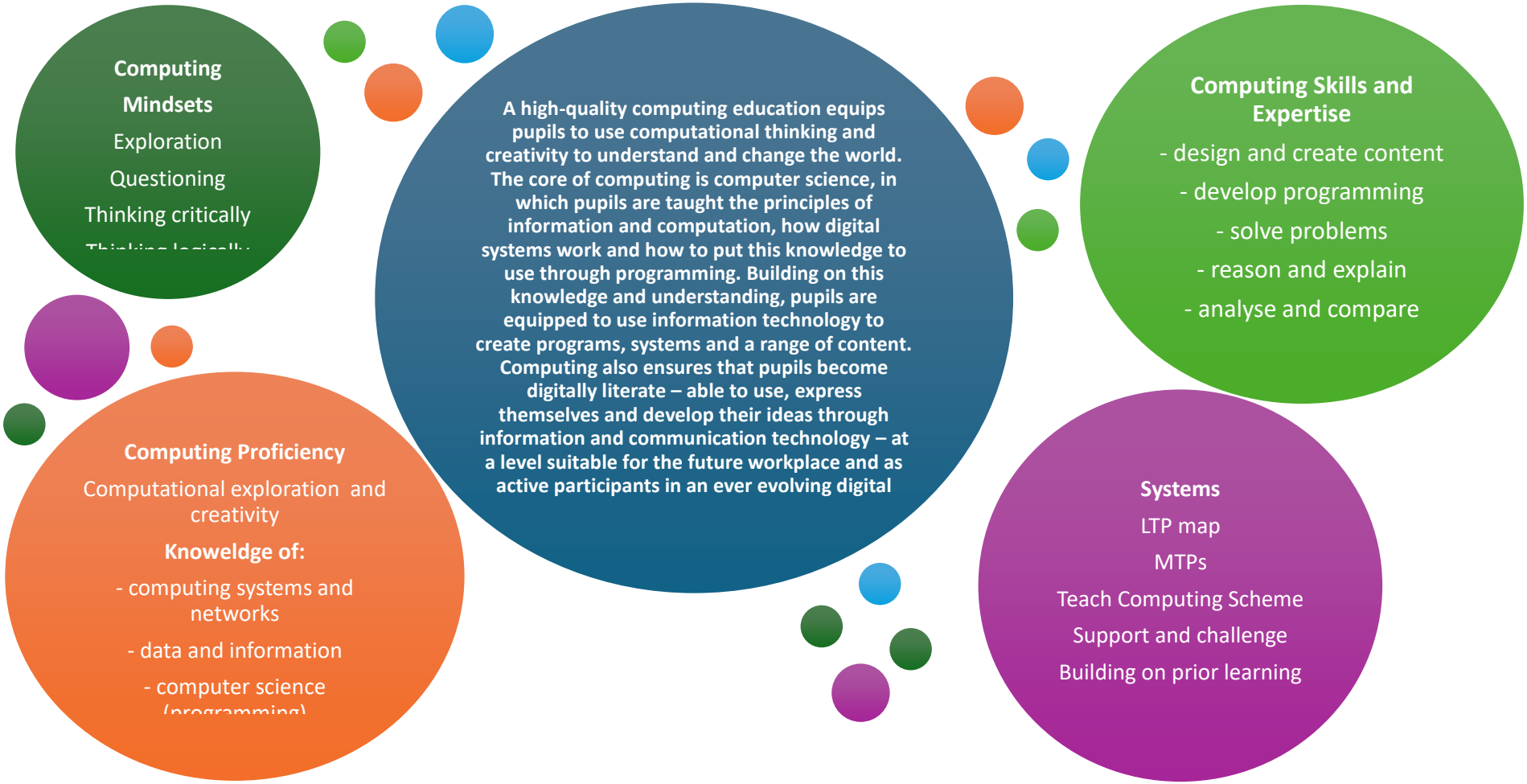
Blagdon Primary School Computing Curriculum

Plans and Key Information

Contents:

1.0 Intent


Computing Mindsets
Exploration
Questioning
Thinking critically
A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, express themselves and develop their ideas through information and communication technology – at a level suitable for the future workplace and as active participants in an ever evolving digital
Computing Skills and Expertise
- design and create content
- develop programming
- solve problems
- reason and explain
- analyse and compare
Computing Proficiency
Computational exploration and creativity
Knoweldge of:
- computing systems and networks
- data and information
- computer science
Systems
LTP map
MTPs
Teach Computing Scheme
Support and challenge
Building on prior learning

2.0 Computing Long Term Plan

	Cycle B (beginning academic Year 23/24)					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Oak	Computing Systems and Networks – Technology Around Us (1.1)	Creating Media A – Digital Photography (2.2)	Data and Information – Grouping Data (1.4)	Programming A – Robot Algorithms (2.3)	Creating Media B – Digital Writing (1.5)	Data and Information – Pictograms (2.4)
Willow	Computing Systems and Networks – Connecting Computers (3.1)	Creating Media A – Audio Editing (4.2)	Data and Information - Branching Databases (3.4)	Programming A – Repetition in Shapes (4.3)	Creating Media B – Desktop Publishing (3.5)	Data and Information – Data Logging (4.4)
Sycamore	Computing Systems and Networks – Sharing Information (5.1)	Creating Media A – Webpage Creation (6.2)	Data and Information – Fact File Databases (5.4)	Programming A – Variables in Games (6.3)	Creating Media B – Vector Drawing (5.5)	Data and Information – Introduction to Spreadsheets (6.4)

	Cycle A – Starting Academic Year 24/25					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Oak	Creating Media A – Digital Painting (1.2)	Computing Systems and Networks – Information Technology around us (2.1)	Programming A – Moving a Robot (1.3)	Creating Media B – Making Music (2.5)	Programming B – Programming Animations (1.6)	Programming B – Programming Quizzes (2.6)
Willow	Creating Media A – Stop-frame animation (3.2)	Computing Systems and Networks – The Internet (4.1)	Programming A – Sequencing Sounds (3.3)	Creating Media B – Photo Editing (4.5)	Programming B – Events and Actions in programs (3.6)	Programming B – Repetition in games (4.6)
Sycamore	Creating Media A – Video Editing (5.2)	Computing Systems and Networks – Internet Communication (6.1)	Programming A – Selection in Physical Computing (5.3)	Creating Media B – 3D Modelling (6.5)	Programming B – Selection in Quizzes (5.6)	Programming B – Sensing (6.6)

3.0 LSP Overview with Hyperlinks

Computing LTP	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	**Computing systems and networks** Technology around us (1.1)* **Creating media A** Digital painting (1.2)	**Computing systems and networks** Information technology around us (2.1)* **Creating media A** Digital photography (2.2)	**Computing systems and networks** Connecting computers (3.1) **Creating media A** Stop-frame animation (3.2)	**Computing systems and networks** The internet (4.1) **Creating media A** Audio editing (4.2)	**Computing systems and networks** Sharing information (5.1) **Creating media A** Video editing (5.2)	**Computing systems and networks** Internet communication (6.1) **Creating media A** Webpage creation (6.2)
Spring	**Programming A** Moving a robot (1.3) **Data and information** Grouping data (1.4)	**Programming A** Robot algorithms (2.3) **Data and information** Pictograms (2.4)	**Programming A** Sequencing sounds (3.3) **Data and information** Branching databases (3.4)	**Programming A** Repetition in shapes (4.3) **Data and information** Data logging (4.4)	**Programming A** Selection in physical computing (5.3) **Data and information** Flat-file databases (5.4)	**Programming A** Variables in games (6.3) **Data and information** Introduction to spreadsheets (6.4)
Summer	**Creating media B** Digital writing	**Creating media B** Making music	**Creating media B**	**Creating media B**	**Creating media B**	**Creating media B**

	(1.5) **Programming B** Programming animations (1.6)	(2.5) **Programming B** Programming quizzes (2.6)	Desktop publishing (3.5) **Programming B** Events and actions in programs (3.6)	Photo editing (4.5) **Programming B** Repetition in games (4.6)	Vector drawing (5.5) **Programming B** Selection in quizzes (5.6)	3D modelling (6.5) **Programming B** Sensing (6.6)
	*****Networks are not part of the key stage 1 national curriculum for computing but the title is used as a strand across primary.				**Oak national academy have produced recorded lessons for the Y5 and Y6 units available here** https://classroom.thenational.academy/subjects-by-key-stage/key-stage-2/subjects/computing	

4.0 Teach Computing – Key Information

The Blagdon Primary School and LSP computing curriculum is based on the Teach Computing Scheme of work. Each year group has 6 units with 6 lessons per unit, which have a spiral progression and build on prior learning and experiences of concept and skills. In mixed year group planning, we have ensured this approach still occurs, ensuring each class is doing the same unit at the same time, with a mixture of year group units throughout the year.

4.1 Teaching Order

It is recommended that the 'Programming' and 'Creating Media' units be revisited in two different terms within the school year. We have ensured that our mixed age planning covers this recommendation by splitting the units in two to ensure full coverage. Otherwise, Schools can choose the order in which they teach the units, based on the needs of their pupils and other topics or events that are happening throughout the school year, to make use of cross-curricular links wherever possible.

4.2 Learning Graphs

Learning graphs are provided as part of each unit to demonstrate progression through concepts and skills. In order to learn these concepts and skills, pupils need prior knowledge of others, so the learning graphs show which concepts and skills need to be taught first and which could be taught at a different time.

In each year group, there are 'two' Programming units of work, but only one 'Programming' learning graph. The second 'Programming' unit builds on the concepts that was taught in the first

'Programming' unit so closely that there is no specific divide where one ends and the other begins. We have adapted these learning graphs to suit the needs of our mixed-age group classes.

4.3 Online Safety

The unit overviews for each unit show the links between the content of the lessons and the National Curriculum and Education for a Connected World framework (ncce.io/efacw). These references have been provided to show where aspects relating to online safety, or digital citizenship, are covered within the Teach Computing Curriculum.

Not all the objectives in the Education for a Connected World Framework are covered in the Teach Computing Curriculum, as some are better suited to Personal, Social, Health and Economic (PSHE) education; spiritual, moral, social, and cultural (SMSC) development and citizenship.

We have created our own e-safety overview to ensure full coverage for our pupils. This is adaptable for the needs of our cohort, as the scope of e-safety is much wider than just curriculum content.

	Cycle B – E-Safety

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Oak	Lessons (one per term) - Buddy the Dog's Internet Story - Term 1 - On the Internet eBook – Term 2 - Online Identity – Term 3 - Who Can I Tell? Activity Sheet – Term 4 - All Fun and Games? – Term 5 - Design Your Own E-Safety Poster – Term 6					
Willow	Lessons (one per term) - Screen Time, Teacher to choose an activity – Term 1 - Hanni and the Magic Window Story – Term 2 - All Fun and Games? KS2 Assembly – Term 3 - Online Identity KS2 Assembly – Term 4 - Choose an Activity for Upsetting Online Content - Term 5 - Trust Me KS2 Assemblies x 2 – Term 6					
Sycamore	Lessons (one per term) - Screen Time, Teacher to choose an activity – Term 1 - Choose an Activity for Upsetting Online Content - Term 2 - All Fun and Games? KS2 Assembly – Term 3 - Online Identity KS2 Assembly – Term 4 - Phones: Being Smart – Term 5 - Trust Me KS2 Assemblies x 2 – Term 6					
	Cycle A – E-Safety					

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Oak	Lessons (one per term) - - Term 1 - – Term 2 - – Term 3 - – Term 4 - - Term 5 - – Term 6					
Willow	Lessons (one per term) - Term 1 - Password Security KS2 Assembly – Term 2					
Sycamore	Lessons (one per term) - AI – How do we stay safe? – Term 1 - Password Security - Term 2 - – Term 3 - – Term 4 - – Term 5 - – Term 6					

4.4 Key Reading for Teachers

Teach Computing provides a KS1 Teacher Guide and a KS2 Teacher Guide. The 12 pedagogy principles of the Teach Computing and National Centre for Computing Education (NCCE) and the classroom poster explains the foundations of the Teach Computing curriculum.

3.5 Progression across key stages and taxonomy: All learning objectives have been mapped to the National Centre for Computing Education's taxonomy of ten strands, which ensures that units build on each other from one key stage to the next.

Teach Computing Taxonomy		
Abbreviation	**Strand**	**Description**
NW	Networks	Understand how networks can be used to retrieve and share information, and how they come with associated risks
CM	Creating Media	Select and create a range of media including text, images, sounds, and video
DI	Data & Information	Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
DD	Design & Development	Understand the activities involved in planning, creating, and evaluating computing artefacts
CS	Computing Systems	Understand what a computer is, and how its constituent parts function together as a whole
IT	Impact of Technology	Understand how individuals, systems, and society as a whole interact with computer systems
AL	Algorithms	Be able to comprehend, design, create, and evaluate algorithms
PG	Programming	Create software to allow computers to solve problems
ET	Effective Use of tools	Use software tools to support computing work
SS	Safety & Security	Understand risks when using technology, and how to protect individuals and systems

Within the Teach Computing Curriculum, every year group learns through units within the same four themes, which combine the ten strands of the National Centre for Computing Education's taxonomy (see table below). This approach allows us to use the spiral curriculum approach.

Primary Themes	**Computing systems and networks**	**Programming**	**Data and information**	**Creating media**
Taxonomy Strands	- Computer systems - Computer networks	- Programming - Algorithms - Design and development	- Data and information	- Creating media - Design and development
	Effective use of tools			
	Impact of technology			
	Safety and security			

4.6 Resources (software and hardware)

Computing is intrinsically linked to technology and therefore requires that pupils experience and use a range of digital tools and devices. To make the units of work more accessible to pupils and teachers, the materials include screenshots, videos, and instructions and these are based on the tools listed in the table below. All the learning objectives can be met with alternative hardware and software, as the learning objectives are not designed to be tool specific.

Software and hardware overview

Requirements for pupils – below

✓ Used for the unit – reflected in screenshots ● Could be used as an alternative

	Desktop or laptop	Chromebook	Tablet	Software or hardware
1.1 Technology around us	✓	●	●	paintz.app
1.2 Digital painting	✓	●	●	Microsoft Paint or similar
1.3 Moving a robot				Bee-Bot, Blue-Bot, or other fixed-movement floor robot
1.4 Grouping data	✓	●		Google Slides or Microsoft PowerPoint
1.5 Digital writing	✓	●	●	Google Docs or Microsoft Word
1.6 Programming animations	●	●	✓	ScratchJr
2.1 Information technology around us	✓	●		Google Slides or Microsoft PowerPoint
2.2 Digital photography	✓		●	Digital camera
2.3 Robot algorithms				Bee-Bot, Blue-Bot, or other fixed-movement floor robot
2.4 Pictograms	✓	●	●	j2data Pictogram
2.5 Making music	✓	●	●	Chrome Music Lab
2.6 Programming quizzes	●	●	✓	ScratchJr

	Desktop or laptop	Chromebook	Tablet	Software or hardware
3.1 Connecting computers	✓	●	●	Painting program (any)
3.2 Stop-frame animation	●	●	✓	iMotion (app for iOS)
3.3 Sequencing sounds	✓	●	●	Scratch
3.4 Branching databases	✓	●	●	j2data Branch and Pictogram
3.5 Desktop publishing	✓	●		Adobe Spark
3.6 Events and actions in programs	✓	●	●	Scratch
4.1 The internet	✓	●	●	Various websites
4.2 Audio editing	✓			Audacity
4.3 Repetition in shapes	✓	●	●	FMSLogo
4.4 Data logging	✓	+	+	Data logger
4.5 Photo editing	✓	●		Paint.NET (for Microsoft Windows)
4.6 Repetition in games	✓	●	●	Scratch

✓ Used for the unit – reflected in screenshots ● Could be used as an alternative + Data loggers that work with Chromebooks or tablets are available. Check with suppliers.

	Desktop or laptop	Chromebook	Tablet	Software or hardware
5.1 Sharing information	✓	●		Google Slides
5.2 Video editing	✓	●	●	Microsoft Photos (for Microsoft Windows 10)
5.3 Selection in physical computing	✓	●		Crumble controller + starter kit + motor
5.4 Flat-file databases	✓	●	●	j2data Database
5.5 Vector drawing	✓	●		Google Drawings
5.6 Selection in quizzes	✓	●		Scratch
6.1 Internet communication	✓	●		
6.2 Webpage creation	✓	●		Google Sites
6.3 Variables in games	✓	●		Scratch
6.4 Introduction to spreadsheets	✓	●	●	Google Sheets or Microsoft Excel
6.5 3D modelling	✓	●	●	Tinkercad
6.6 Sensing	✓	●	●	micro:bit and Microsoft MakeCode

✓ Used for the unit – reflected in screenshots ● Could be used as an alternative

National Curriculum Coverage — Key Stage 1 Computing Curriculum	1.1 Technology around us	1.2 Digital painting	1.3 Moving a robot	1.4 Grouping data	1.5 Digital writing	1.6 Programming animations	2.1 Information technology around us	2.2 Digital photography	2.3 Robot algorithims	2.4 Pictograms	2.5 Making music	2.6 Programming quizzes
Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions			✓			✓			✓			✓
Create and debug simple programs			✓			✓			✓			✓
Use logical reasoning to predict the behaviour of simple programs			✓			✓			✓			✓
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓
Recognise common uses of information technology beyond school	✓		✓	✓			✓	✓				
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	✓				✓	✓	✓			✓		

National Curriculum Coverage — Years 3 and 4	3.1 Connecting computers	3.2 Stop-frame animation	3.3 Sequencing sounds	3.4 Branching databases	3.5 Desktop publishing	3.6 Events and actions in programs	4.1 The Internet	4.2 Audio editing	4.3 Repetition in shapes	4.4 Data logging	4.5 Photo editing	4.6 Repetition in games
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts			✓			✓			✓			✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	✓		✓			✓			✓	✓		✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			✓			✓			✓			✓
Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration	✓						✓					
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content					✓		✓	✓			✓	
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact							✓	✓			✓	

National Curriculum Coverage — Years 5 and 6	5.1 Sharing information	5.2 Video editimg	5.3 Selection in physical computing	5.4 Flat-file databases	5.5 Vector drawing	5.6 Selection in quizzes	6.1 Internet communication	6.2 Webpage creation	6.3 Variables in games	6.4 Introduction to spreadsheets	6.5 3D modelling	6.6 Sensing
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	✓		✓			✓	✓		✓			✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	✓		✓			✓			✓			✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			✓			✓			✓			✓
Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration	✓						✓					
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		✓		✓			✓	✓				
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	✓	✓						✓	✓		✓	

4.8 Teaching Structure and Summary of Units

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 1	**Technology around us** Recognising technology in school and using it responsibly.	**Digital painting** Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.	**Moving a robot** Writing short algorithms and programs for floor robots, and predicting program outcomes.	**Grouping data** Exploring object labels, then using them to sort and group objects by properties.	**Digital writing** Using a computer to create and format text, before comparing to writing non-digitally.	**Programming animations** Designing and programming the movement of a character on screen to tell stories.
Year 2	**Information technology around us** Identifying IT and how its responsible use improves our world in school and beyond.	**Digital photography** Capturing and changing digital photographs for different purposes.	**Robot algorithms** Creating and debugging programs, and using logical reasoning to make predictions.	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer.	**Making music** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	**Programming quizzes** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 3	**Connecting computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	**Stop-frame animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story.	**Sequencing sounds** Creating sequences in a block-based programming language to make music.	**Branching databases** Building and using branching databases to group objects using yes/no questions.	**Desktop publishing** Creating documents by modifying text, images, and page layouts for a specified purpose.	**Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions.
Year 4	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	**Audio editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes.	**Data logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	**Photo editing** Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game.

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 5	**Sharing information** Identifying and exploring how information is shared between digital systems.	**Video editing** Planning, capturing, and editing video to produce a short film.	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller.	**Flat-file databases** Using a database to order data and create charts to answer questions.	**Vector drawing** Creating images in a drawing program by using layers and groups of objects.	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz.
Year 6	**Internet communication** Recognising how the WWW can be used to communicate and be searched to find information.	**Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	**Variables in games** Exploring variables when designing and coding a game.	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data.	**3D modelling** Planning, developing, and evaluating 3D computer models of physical objects.	**Sensing** Designing and coding a project that captures inputs from a physical device.